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ABSTRACT

A method for ion implantation of high dielectric constant materials with dopants to improve sidewall stoichiometry is disclosed. Particularly, the invention relates to ion implantation of (Ba,Sr)TiO₃ (BST) with Ti dopants. The invention also relates to varying the ion implantation angle of the dopant to uniformly dope the high dielectric constant materials when they have been fabricated over a stepped structure. Additionally, the invention relates to forming a capping layer over a horizontal portion of the BST film to reduce excess dopant from being implanted into the horizontal section of the BST film. The invention also relates to integrated circuits having a thin film high dielectric material with improved sidewall stoichiometry used as an insulating layer in a capacitor structure.

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